

# ***RHODE ISLAND FISHERIES STOCK STATUS***

**AN OVERVIEW**

**2004**



Report presented to the  
Rhode Island General Assembly

By

Division of Fish and Wildlife  
Fort Wetherill Marine Laboratory  
3 Wetherill Rd  
Jamestown, RI 02835

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*Our mission is to ensure that the Freshwater, Marine, and Wildlife Resources of the State of Rhode Island will be conserved and managed for equitable and sustainable use.*

## **I- INTRODUCTION**

The Rhode Island commercial fishery supports approximately 4,500 license holders. The direct dockside value of commercial landings has fluctuated widely over the last ten years between a high of \$86 million recorded in 1999 and a low of \$69 million in 2003. Landings of ground fish, shellfish and lobster provide the mainstay of the industry. The total value of the industry, however, when domestic sales, exports, purchase of supplies and services and other generators of economic activity are factored in, is estimated to be in excess of \$500 million (R.I. Seafood Council).

In addition, on an average annual basis, an estimated 300,000 recreational anglers, 62% of them non-residents, generate over one million fishing trips and spend in excess of \$150 million on bait, tackle, boats, and gear. Recreational fishing has become such an important component of Rhode Island marine fishing that the recreational take exceeds the commercial take for a number of important species (striped bass, summer flounder, blue fish, black sea bass, scup, and tautog).

While there is evidence of stock rebuilding in some fisheries, four out of ten of the state's most valuable species remain over fished, including those generating the highest dockside revenues (lobster, quahog, winter flounder, and bluefish). Management restrictions on catch of these species must be maintained if these stocks are to reach sustainable levels.

Rhode Island has exclusive management control only for those species that spend their entire lives in state waters. Exclusivity is effectively limited to sedentary bivalves such as quahogs, oysters and whelks. The Atlantic States Marine Fisheries Commission (ASMFC), a compact of the US east coast states, manages inshore migratory species along the Atlantic seaboard inside of 3 miles. This interstate fishery management program covers species such as striped bass, bluefish, scup, black sea bass, summer and winter flounders, menhaden, weakfish, and tautog. Other species which spend most of their life cycles in federal waters (3-200 miles) are managed by the New England Fisheries Management Council and/or the Mid-Atlantic Fisheries Management Council.

Recognizing the crisis confronting fisheries management in Rhode Island, the General Assembly passed and the Governor signed new legislation in 2004 (S 2771) that provides a framework for the Director of DEM and the Marine Fisheries Council to better manage marine fisheries in Rhode Island. In addition, the new statute creates a much improved fisheries management process, consistent with the goals established by the General Assembly in the Marine Fisheries Management Modernization Act of 2001.

In 2002, the General Assembly passed comprehensive new legislation that restructured the commercial fishing licensing program and further reformed the State's marine fisheries management program. The licensing statute identified new management goals and fishery conservation standards to prevent over-fishing and to assure management of marine resources that is compatible with those by federal and inter-states agencies. The Department Director was granted rule making powers to establish a commercial licensing system to accomplish the goals and principals set forth in this Act with regard to participation, gear and effort restriction, area closures, and minimization of by-catch. A summary of licenses issued by the Department for the last 15 years including licenses issued under the new licensing system is found in Table 1 & 2.

During the course of 2004, Rhode Island Division of Fish and Wildlife, Marine Fisheries (RIDFW) continued implementation of SAFIS (Standard Atlantic Fisheries Information System), an internet based electronic fisheries reporting interface. The RI Atlantic Coast Cooperative Statistics Program (ACCSP) coordinator in conjunction with the National Marine Fisheries Service (NMFS) RI-CT port agent, and ACCSP information technology staff spent January through April preparing RI dealers and SAFIS for the NOAA fisheries May 1<sup>st</sup>, 2004 control date requiring mandatory reporting for federally permitted dealers. Since May 1<sup>st</sup>, 2004, RIDFW has achieved its goal of bringing the majority of high and many mid-volume seafood dealers into the system. As of July 1, 2004, approximately 90% of RI federally permitted dealers are using SAFIS for landings reports. RIDFW has begun the process of relieving dealers of the state requirement of calling in landings of quota-managed species via the computerized Interactive Voice Response (IVR) system. Each dealer must have successfully entered landings into SAFIS and the IVR for a benchmarking period. Both sets of landings data are compared for quality assurance after which the dealer is excused of IVR reporting. Currently, one dealer has passed the benchmarking period with several others soon to follow.

RIDFW continued the RI Lobster Catch and Effort Logbook program that is funded with a federal grant. During the 2003 reporting year, approximately 11,500 logbook records were processed and checked for quality assurance. This amount reflects approximately 90% of license holders in compliance of the reporting requirements. Rhode Island commercial licensees may not renew their licenses unless they have completed their lobster catch and effort logbooks. The database has proved itself invaluable in determining commercial catch and effort statistics as well as tracking active verses latent license holders.

Table 1: Rhode Island Fishing Licenses Sold by Gear Type (1990-2002)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
<b>Fisherman</b>													
Shellfish	2107	2200	2378	1787	1663	1885	1489	1438	1512	1007	1381	1337	1320
Multi	905	947	1046	718	693	914	753	764	1107	725	986	998	991
Multi/Gnet	99	156	185	157	161	268	215	212	364	246	366	371	366
Lobster	173	167	163	132	126	135	107	113	126	76	93	95	95
N/c Lob Diver	1200	1219	1135	733	630	667	495	620	518	420	541	539	529
N/c Lob Pot	540	503	474	383	364	382	321	405	418	284	425	434	439
Ot/Beam Trawl	23	28	32	22	21	13	12	11	18	14	16	12	12
Shell Dredge	0	0	0	0	0	0	0	0	0	1	1	1	1
Rod & Reel	150	149	167	114	128	228	401	172	299	252	392	390	388
Misc Pot	7	3	4	3	2	3	1	1	1	1	1	1	1
FW Minnow	18	24	22	24	24	32	30	21	17	10	17	14	14
<b>Subtotal</b>	<b>5222</b>	<b>5396</b>	<b>5606</b>	<b>4073</b>	<b>3812</b>	<b>4527</b>	<b>3824</b>	<b>3757</b>	<b>4380</b>	<b>3036</b>	<b>4219</b>	<b>4192</b>	<b>4156</b>
<b>Dealers</b>													
Lobster	0	0	6	10	7	8	10	8	7	7	8	7	7
Shellfish	53	62	60	26	24	22	24	19	15	8	12	10	10
Finfish	0	0	0	5	13	13	11	6	17	7	13	14	14
Multi	0	0	13	52	54	72	72	82	83	62	77	79	79
<b>Subtotal</b>	<b>53</b>	<b>62</b>	<b>79</b>	<b>93</b>	<b>98</b>	<b>115</b>	<b>117</b>	<b>115</b>	<b>122</b>	<b>84</b>	<b>110</b>	<b>110</b>	<b>110</b>
<b>Landing</b>													
Resident	0	0	0	0	0	0	0	16	21	2	6	12	14
Non-res	0	0	1	73	139	150	116	170	177	107	142	144	135
<b>Total</b>	<b>5275</b>	<b>5458</b>	<b>5686</b>	<b>4239</b>	<b>4049</b>	<b>4792</b>	<b>4057</b>	<b>4058</b>	<b>4700</b>	<b>3229</b>	<b>4477</b>	<b>4458</b>	<b>4435</b>

Table 2: Comparison of fishing license types between 2003 to 2004

LICENSES			
	2003	2004	CHANGE
<b>MULTI-PURPOSE LICENSE</b>	<b>1,191</b>	<b>1,135</b>	<b>-56</b>
<b>PRINCIPAL EFFORT LICENSE</b>	<b>1,325</b>	<b>1,148</b>	<b>-177</b>
LOBSTER ENDORSEMENT	61	56	-5
NON-LOBSTER CRUSTACEAN ENDORSEMENT	19	20	1
QUAHOG ENDORSEMENT	924	776	-148
NON-QUAHOG ENDORSEMENT	672	556	-116
RESTRICTED FINFISH ENDORSEMENT	338	326	-12
NON-RESTRICTED FINFISH ENDORSEMENT	138	147	9
<b>COMMERICAL FISHING LICENSE</b>	<b>271</b>	<b>283</b>	<b>12</b>
LOBSTER ENDORSEMENT	50	48	-2
NON-LOBSTER CRUSTACEAN ENDORSEMENT	68	69	1
NON-QUAHOG ENDORSEMENT	156	172	16
NON-RESTRICTED FINFISH ENDORSEMENT	192	198	6
<b>OVER 65 SHELLFISH LICENSE</b>	<b>50</b>	<b>86</b>	<b>36</b>
<b>STUDENT SHELLFISH LICENSE</b>	<b>107</b>	<b>97</b>	<b>-10</b>
LANDING PERMITS			
	2003	2004	CHANGE
<b>RESIDENT</b>			
MULTI-PURPOSE	17	20	3
FINFISH	9	8	-1
CRUSTACEAN	2	1	-1
SHELLFISH	0	0	0
MISCELLANEOUS	0	0	0
<b>NON-RESIDENT</b>			
MULTI-PURPOSE	54	46	-8
RESTRICTED FINFISH	5	5	
NON-RESTRICTED FINFISH	26	23	-3
CRUSTACEAN	2	2	0
SHELLFISH	1	4	3
MISCELLANEOUS	0	0	0

Table 2: continued

<b>GEAR ENDORSEMENTS</b>			
	<b>2003</b>	<b>2004</b>	<b>CHANGE</b>
FISH TRAP	9	9	0
GILL NET	323	307	-16
<b>OTHER LICENSES &amp; DECLARATIONS</b>			
	<b>2003</b>	<b>2004</b>	<b>CHANGE</b>
AQUACULTURE LICENSE	10	9	-1
VESSEL DECLARATION	1,905	1,829	-76
BOAT PLATE	96	65	-31
<b>DEALER LICENSES</b>			
	<b>2003</b>	<b>2004</b>	<b>CHANGE</b>
MULTI-PURPOSE	172	176	4
FINFISH	14	30	16
LOBSTER	10	6	-4
SHELL	11	22	11

## **II- SUMMARY STATUS OF FISH STOCKS**

Below is a table (Table 3) summarizing the status of the fish stocks which are important to Rhode Island. The table indicates whether a fishery is currently overfished and whether overfishing is occurring, by species. An overfished stock or stock complex is one whose size is sufficiently small that a change in management practices is required in order to achieve an appropriate level and rate of rebuilding. A stock or stock complex is considered overfished when its size falls below the Minimum stock size threshold (MSST). A rebuilding plan is required for stocks that are overfished. Overfishing is when a species is being harvested at a rate equal to or greater than that which will meet the management goal, generally maximum sustainable yield. Table 3 also indicates the stock rebuilding schedule where applicable. There are currently 9 species which are considered overfished, 10 species where overfishing is occurring, and 6 species where either the overfished or overfishing occurring status is unknown. The status of the individual fishery sectors are presented subsequent to this section. Graphs contain most recent information available and have been vetted through scientific reviews by the National Marine Fisheries Service or the Atlantic States Marine Fisheries Commission.

Table3: Summary Status of Fish Stocks Important to Rhode Island

SPECIES	OVERFISHED	OVERFISHING	REBUILDING SCHEDULE
Weakfish	No	No	None; biomass has exceeded threshold since 2001
Winter flounder (Narragansett stock)**	Yes	Yes	None; to be established under amendment 1
Black sea bass	No	No	2010; exceeded survey index threshold since 2003
Summer flounder	No	Yes	2010; Biomass exceeded threshold since 2003
Scup	No	Unknown	2010; Exceeded survey index threshold in 2002
Atlantic sturgeon	Yes	No	2038; 1998 moratorium in effect until there are at least 20 protected year classes in each spawning stock
Spiny dogfish	Yes	No	None; FMP states “the time necessary to rebuild the female portion of the spawning stock biomass at $F=0.03$ ”
Atlantic Menhaden***	No	No	Rebuilt
Atlantic Herring	No	No	Rebuilt
Atlantic striped bass	No	No	Rebuilt in 1995
Atlantic mackerel			
Bluefish	Unknown	Unknown	2008
Tautog	Yes	Yes	None; overfishing definition based on $F_{\text{target}}$
Winter flounder (Southern New England stock)*	Yes	Yes	None; to be established under amendment 1
American lobster	Unknown	Yes	2008; restore egg production above overfishing definition
American eel	Unknown	Unknown	None
Horseshoe crab	Unknown	Unknown	None
Shad and river herring	Unknown	Unknown	None; overfishing definition based on $F_{\text{target}}$ for individual river systems
Quahog	Yes	Yes	
Monkfish	Yes	Yes	
Squid	No	No	None
Silver hake	No	No	None
Yellowtail flounder (Southern New England stock)	Yes	Yes	
Butterfish	Yes	Yes	
Skates (little skates)	No	No	None
Witch flounder	No	Yes	
Windowpane flounder	No	No	Rebuilt

\*Winter flounder is managed and assessed by 3 stocks; Southern New England, George’s Bank, and Gulf of Maine.

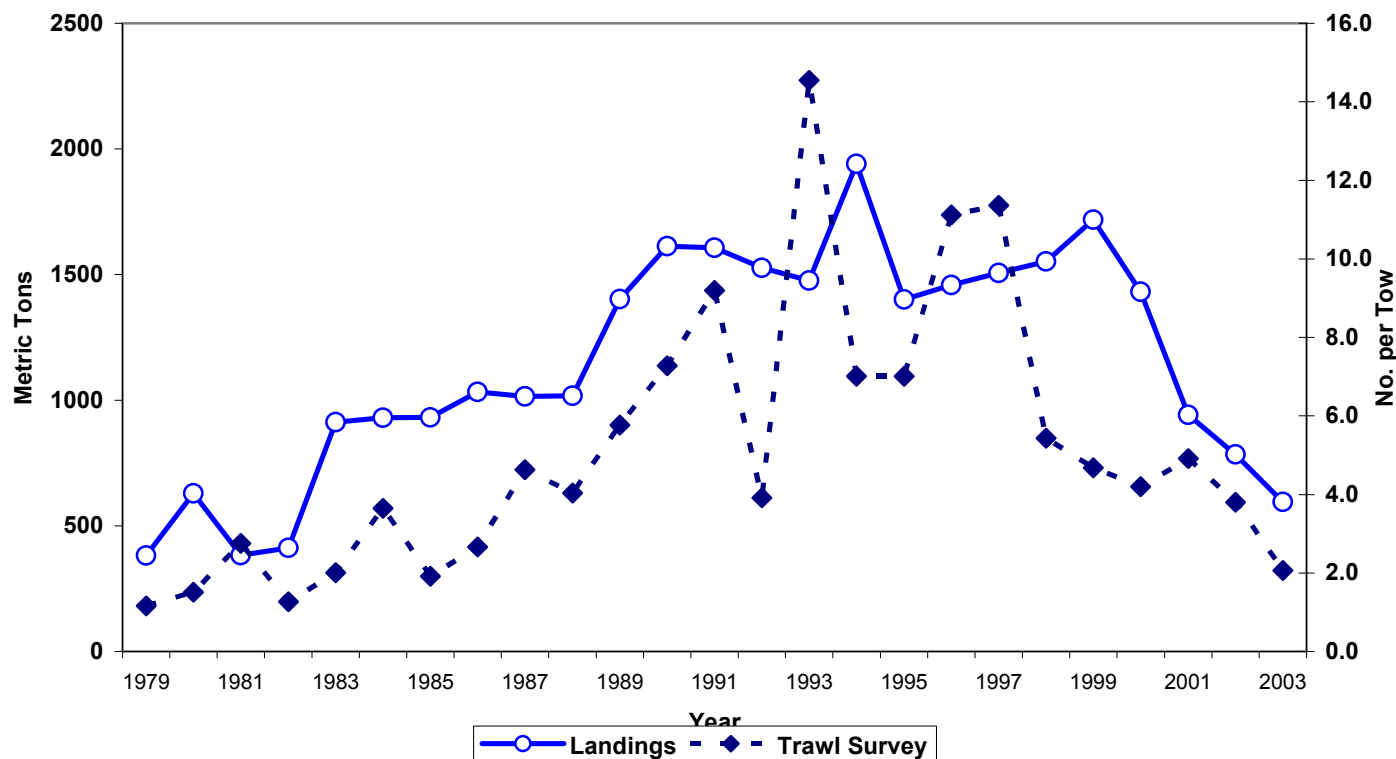
\*\*Within the Southern New England Stock a resident population of winter flounder uses Narragansett Bay as spawning and over-wintering grounds. This population is assessed by RI Division of Fish and Wildlife on an annual basis.

\*\*\*Menhaden is a single stock along the Atlantic coast from Canada to North Florida.

### III- LOBSTER

The RI inshore fishery for American lobster (*Homarus americanus*) has declined sharply in recent years. Both fishery landings and abundance in independent surveys have dropped to low levels (Figure 1).

**Figure 1- Lobster Landings and Index of Abundance**



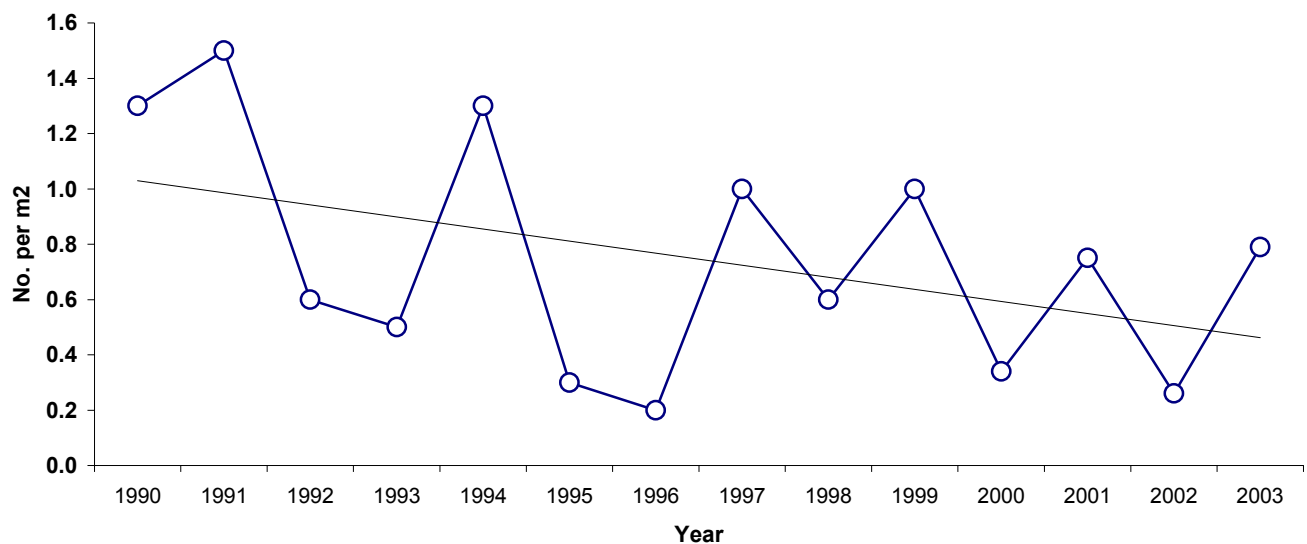
A fishery which was valued at \$17 to \$18 million dollars in the early 1990's is now worth about \$4 million. A number of factors have been implicated in the decline including oil spills, natural cycles, increased predation, pollution, and over fishing.

The lobster problem can be traced back to a decline in newly settled lobster in the early 1990's. In the first summer after hatching, lobsters spend several weeks in the water column as larvae before settling to the bottom as miniature adults. Having assumed the two dimensional life style, they can be surveyed by divers using suction samplers. Results from Rhode Island's survey are plotted in Figure 2. New settler abundance trended downward from 1990 to 1995 reaching a low point in 1996. It is generally accepted that lobster take 6 to 8 years to reach legal size. The 1995-1996 settler low is consistent with low abundance of adults in the trawl survey and fishery



in 2003. It should be noted that although there was some improvement in settler abundance in 1997-1998, two of the last four years were low. This suggests that legal lobster abundance could take some time to rebuild to former levels. The 1990-1996 decline in settler abundance was underway before an outbreak of shell disease was observed and before the North Cape Oil spill occurred. Although these factors may be contributing to the problem, they are not likely the root cause. The source of Rhode Island lobster larvae is not well known, but is likely from both local and offshore spawners. Because of intense fishery removals, inshore spawners are dominated by sub legal, first time spawners while the offshore stock contains a higher proportion of older, larger spawners. It may be that changing oceanographic conditions have reduced the subsidy from offshore spawners, leaving only the limited inshore spawning stock to effect reproduction. American lobsters were declared over fished on a coast wide basis by a peer review panel and the ASMFC is developing remedial measures to rebuild stocks. These will include reductions in fishing mortality in 2004 and increases in minimum size in 2005.

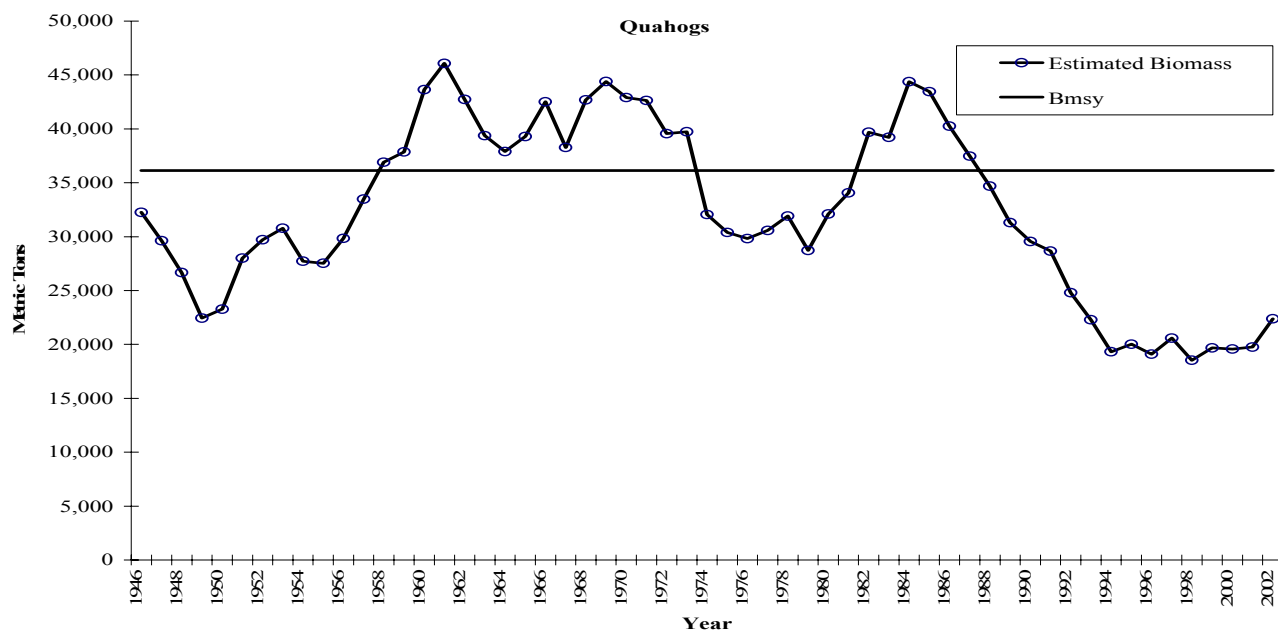
**Figure 2- Juvenile Lobster Index of Abundance**



#### **IV- SHELLFISH**

The Rhode Island shellfish fishery is dominated by the Bay quahog (*Mercuraria mercenaria*). Stock assessments based on fishery landings, fishery effort, and independent survey data indicate that quahog stock biomass is at a relatively low level and below that needed for maximum sustainable yield (MSY). The steady decline that occurred between the mid 1980s and mid 1990s however has since leveled off (Figure 3).

Figure 3: Trends in Rhode Island quahog biomass (*Mercenaria mercenaria*)

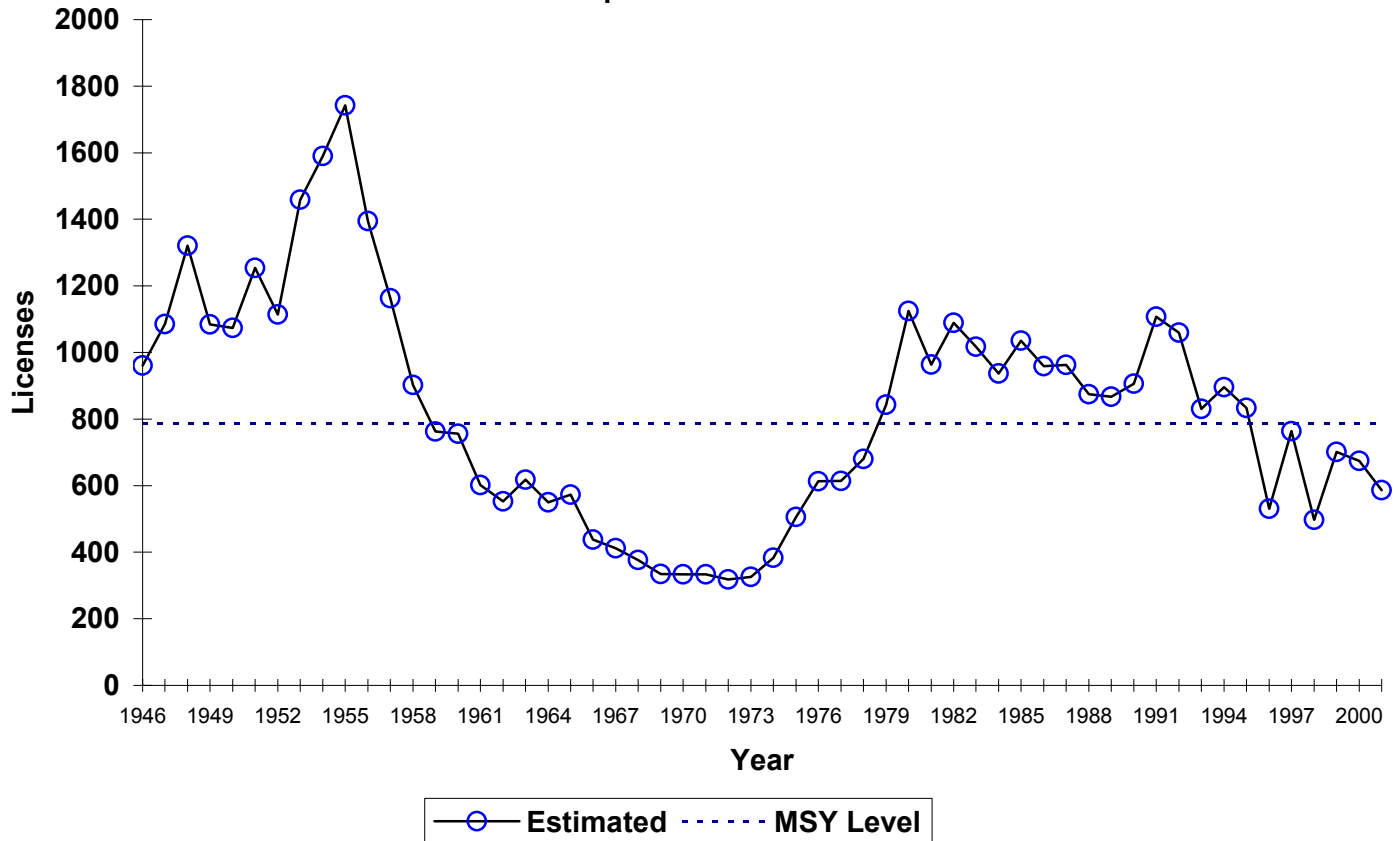


Quahogs are managed entirely within state waters by the Department of Environmental Management with advice from the Rhode Island Marine Fisheries Council. The Department, through the RIDFW, uses a set of management areas and a rotational transplant/harvest system to manage the resource. Permanent and conditional pollution closures restrict the fishery in addition to seasons, possession limits, and management closures.

The shellfish fishery management plan specifies that bay wide fishing mortality rates ( $F$ ) should be maintained near the target level but below the  $F_{msy}$  over fishing definition to allow for biomass rebuilding. This requires maintenance of fishing effort near current levels. The rotational harvest and transplant/spawner sanctuary program should be expanded to include more areas. Recent boat counts and analysis of dealer landings slips indicate that about 350 active shell fishers prosecute the quahog fishery.

It is believed that the stock stabilization evident in Figure 3 occurred as a result of improvements in Greenwich Bay water quality that allowed for reopening in 1994 and the Department's rotational harvest/transplant program in the Pottowomut and High Banks spawner sanctuaries which began in 1997. Over fishing on the stock occurred from 1980 to 1995 but recent effort levels (Figure 4) are below that needed for MSY as is desired under precautionary management.

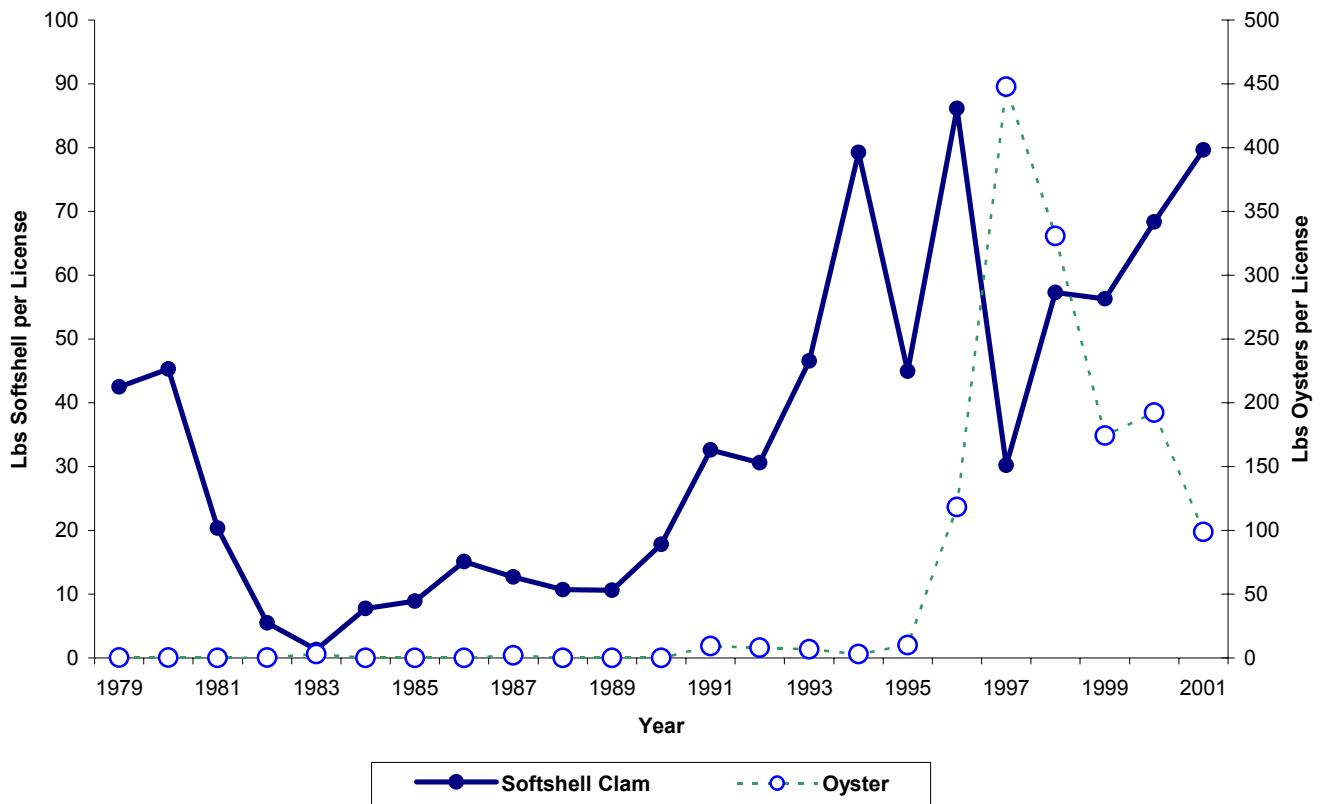
**Fig.4- Narragansett Bay Quahog Fishery Estimated Fishing Effort Compared to MSY Level**



Continued limitations on new entry and continuation of the rotational harvest/transplant program are needed to rebuild stock biomass to the MSY level shown in Figure 3. Recent deterioration of water quality in Narragansett Bay is of major concern and could threaten future management efforts. Other shellfish species in the Bay show disparate abundance trends. Softshell clam abundance is increasing while oyster abundance is declining (Figure 5). The decline in oyster abundance is associated with an increase in the parasitic diseases MSX and Dermo.

In August 2003 a substantial anoxic event occurred within Greenwich Bay resulting in the death of many organisms. Four species of fish, three crab species and one species of shellfish (soft-shelled clams) were observed dead from the event. An estimated one billion soft-shelled clams perished, mostly young of the year. The impact on the population is uncertain at this point but caution should be taken in regard to increased fishing pressure.

**Figure 5- Landings per Active License of Softshell Clams and Oysters**

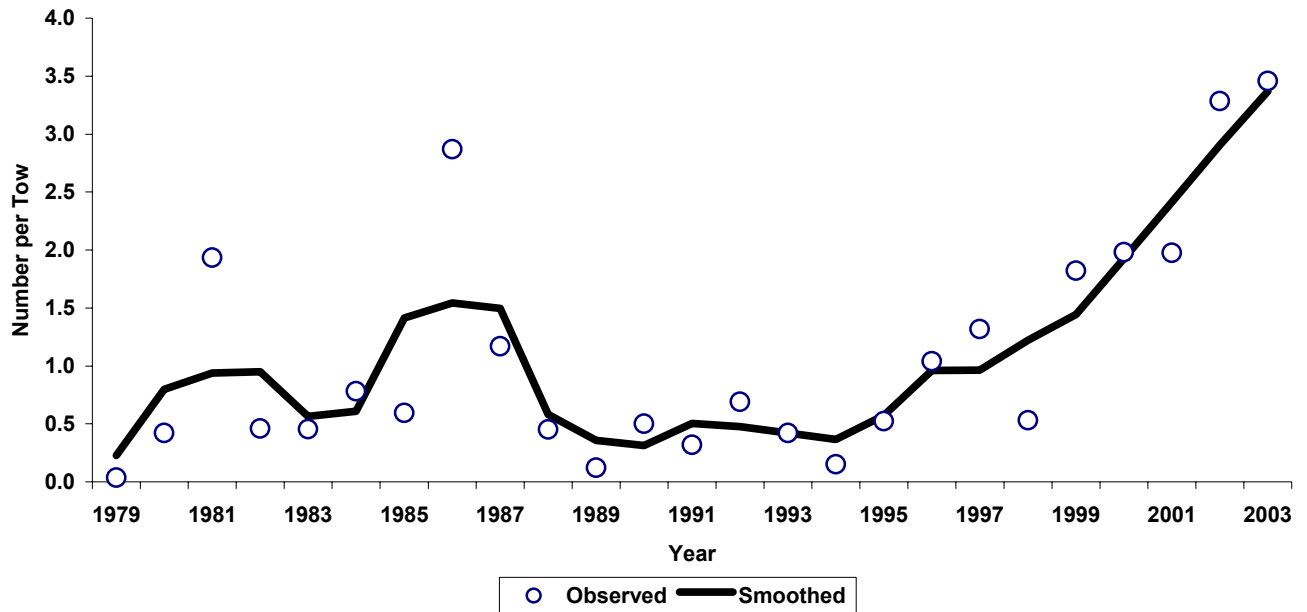


## **V- FINFISH**

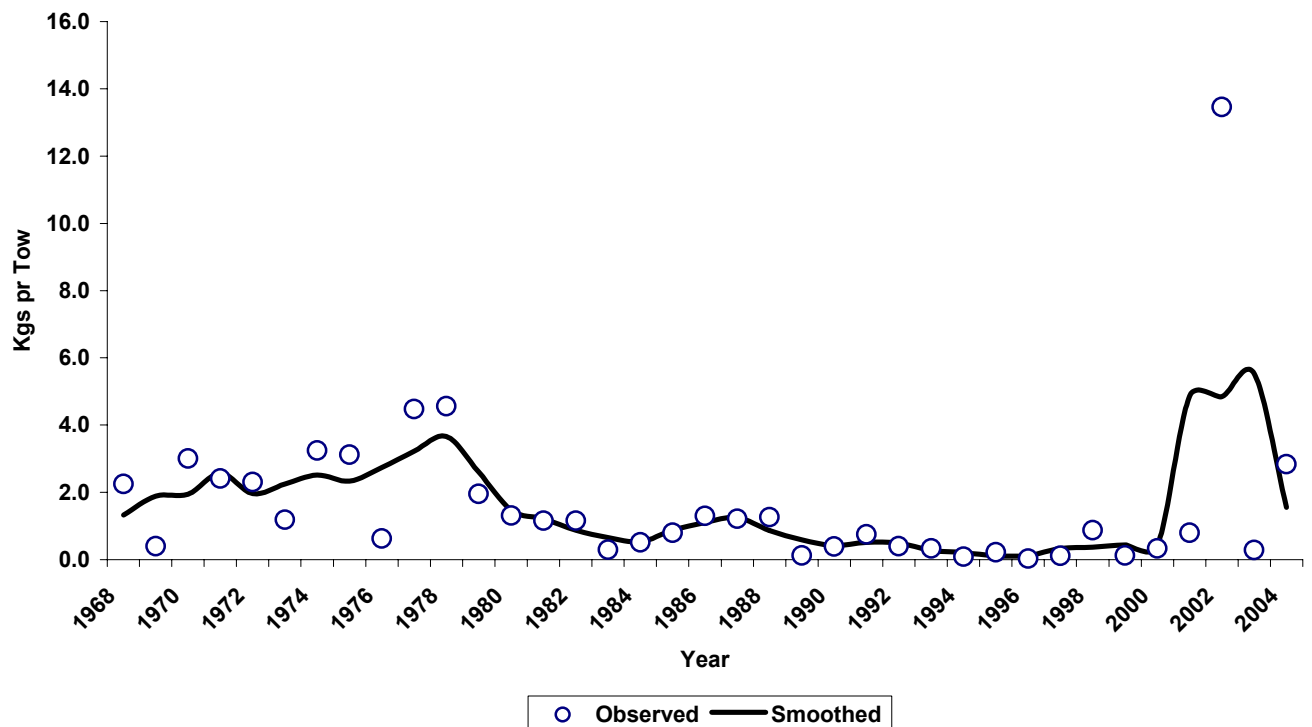
Finfish fisheries in Rhode Island state waters are dominated by the species for which the state has an assigned quota. The Division of Fish and Wildlife monitors catch rates and the fisheries are closed once the quota poundage is reached. Species under quota management include summer flounder, scup, sea bass, tautog, striped bass, and bluefish. Most are seasonal migrants to Rhode Island waters and are increasing in abundance as a result of state-federal management programs that substantially reduced fishing mortality rates and allowed for stock rebuilding (Figures 6-9).



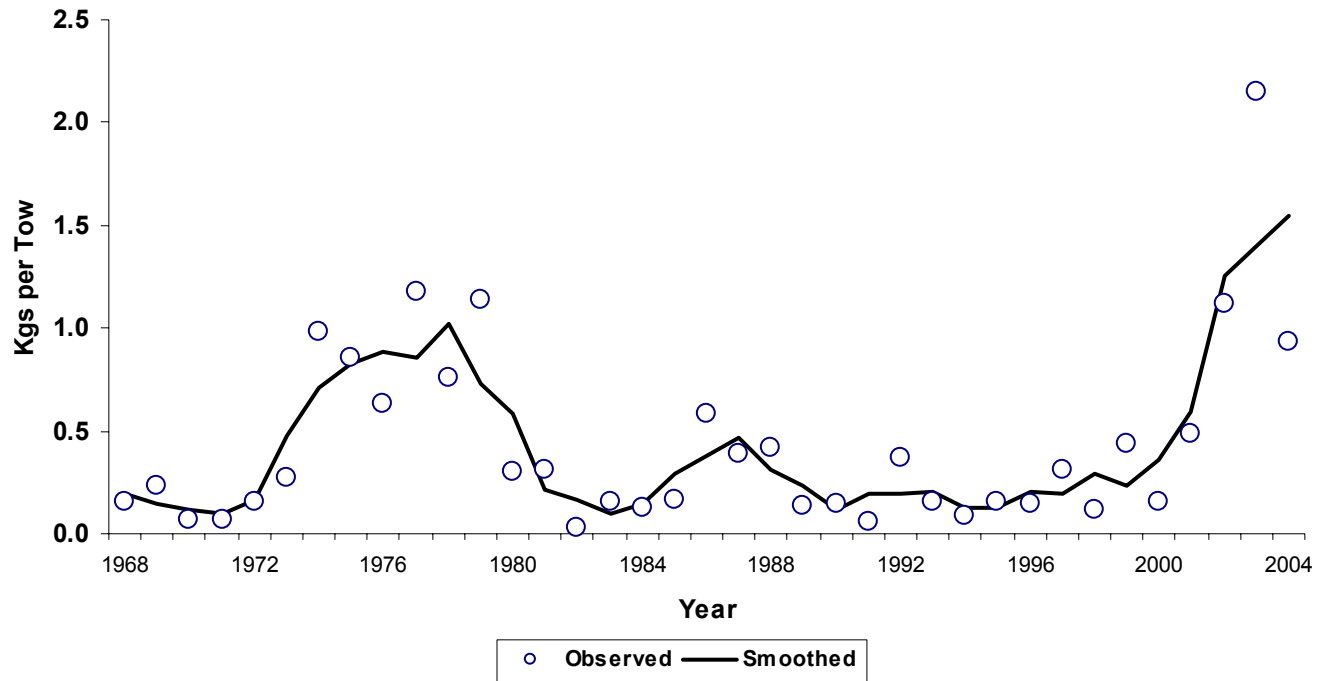
**Figure 6: Summer Flounder Index of Abundance (numbers per tow)**



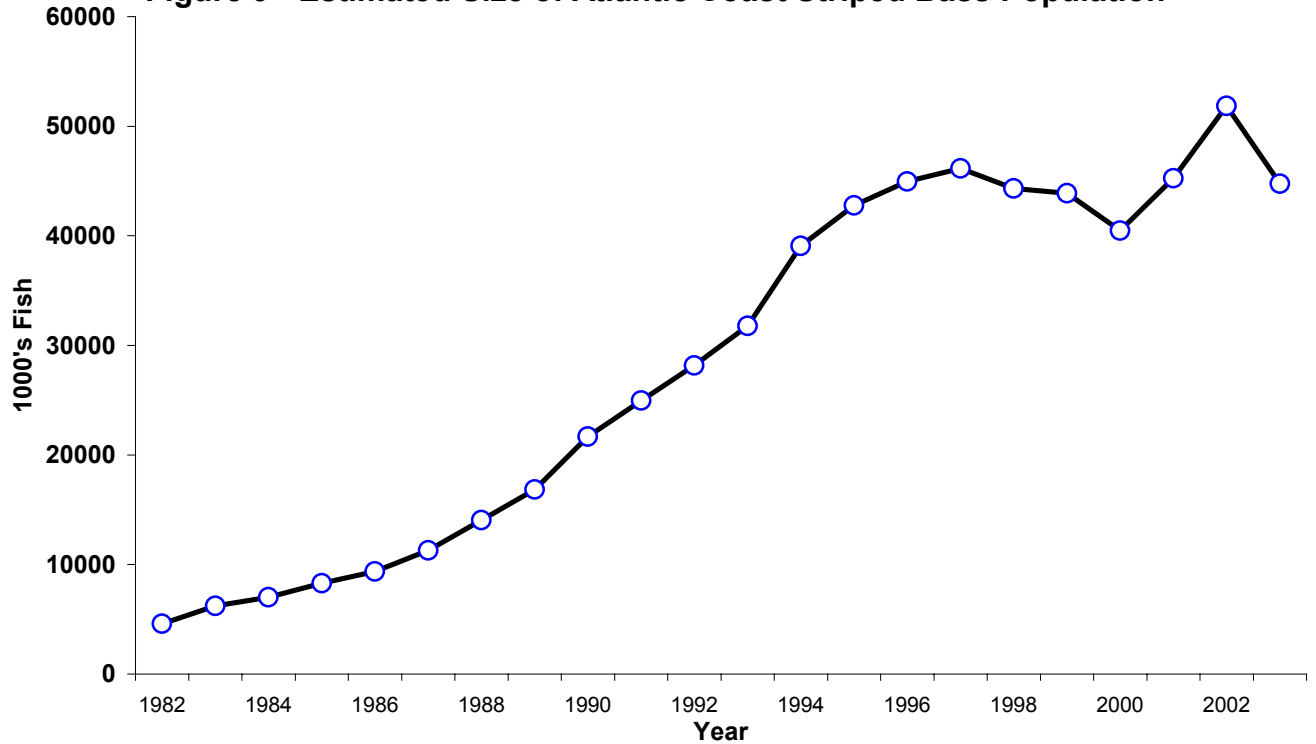
**Figure 7- Scup Index of Abundance (Weight per Tow)**



**Figure 8 - Black Sea Bass Index of Abundance**



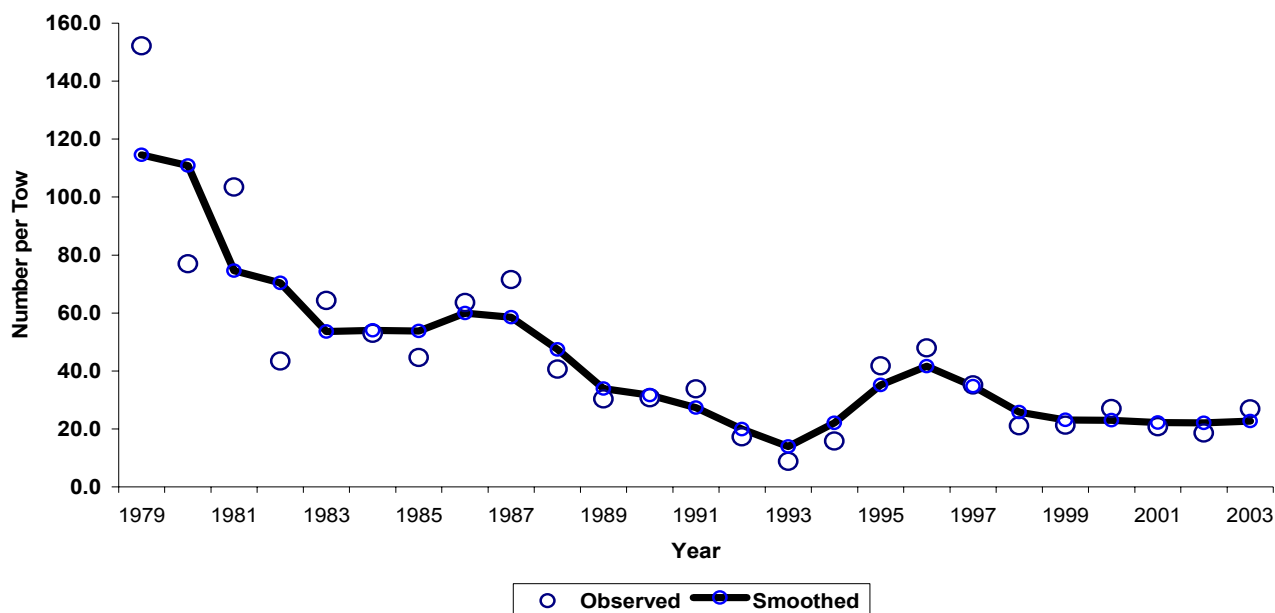
**Figure 9 - Estimated Size of Atlantic Coast Striped Bass Population**



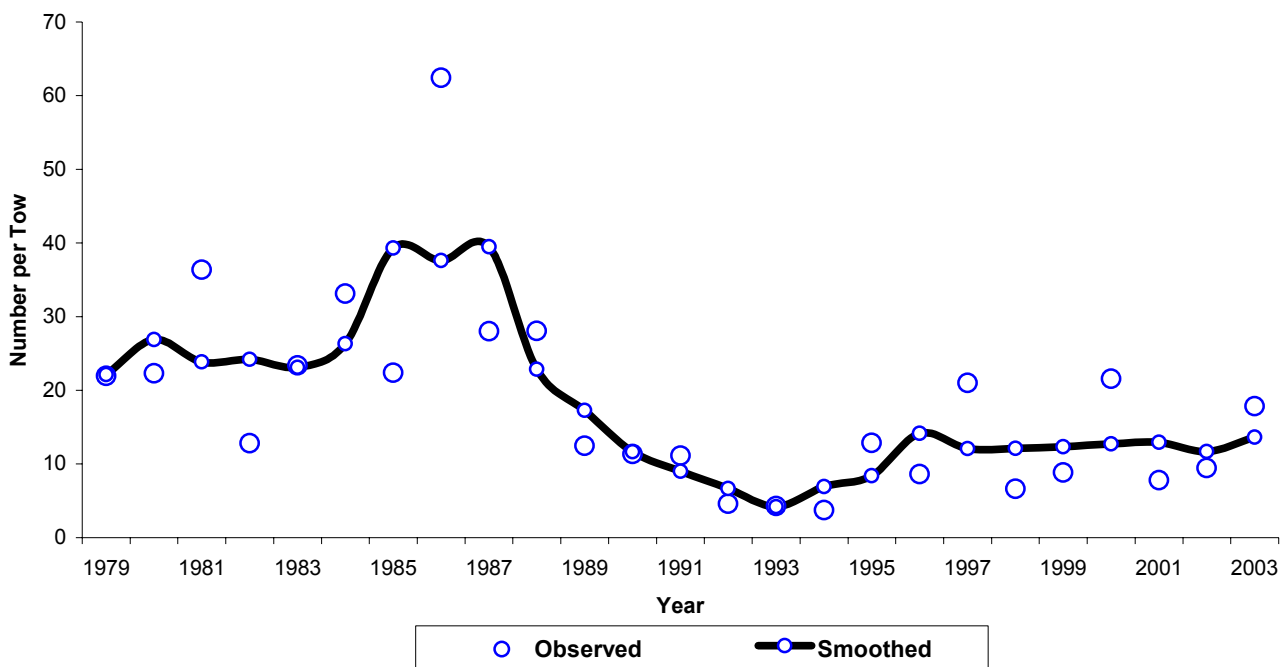
Despite the steady increases in population size, quotas assigned to the state are just beginning to increase. There is a lag between stock biomass increase and quota increase because it is necessary to keep fishing mortality (rate of removal) in check lest over fishing begin anew. Available fishing effort exceeds sustainable, quota levels requiring restrictive regulations. The state cannot currently maintain year around open seasons in the quota fisheries. In 2003 for example, the summer flounder fishery was only open 51 out of the 92 days available for the May through July sub-period. By comparison, the May through July sub-period in 2002 was open 53 days with a smaller quota, which indicates a greater availability of fish, increased effort, or both.

Resident demersal, or bottom dwelling, finfish have special problems not necessarily related to over fishing. Flatfish such as winter flounder, windowpane flounder, and hog choker have declined substantially (Figure 10). Winter Flounder has been fished extensively, but the hogchokers, not targeted by commercial or recreational fishermen, have also declined at the same rate, possibly due to anthropogenic or environmental variables. Similar trends have been observed in other demersal species of Narragansett Bay (Figure 11).

**Figure10- Flatfish Index of Abundance in Narragansett Bay and RI Coastal Waters**



**Figure 11- Demersal Index of Abundance in  
Narragansett Bay and RI Coastal Waters**



While these include exploited species like tautog, they also include species such as toadfish, sculpins, and grubbies that have little fishery value. The wide range of species involved suggests that the Bay's bottom habitat has been impaired. We know from monitoring data that Bay water temperatures have increased and that episodes of low oxygen levels occur in the Bay. We also know that power plants and increased urbanization around the Bay impact selected fish stocks through entrainment, impingement, and thermal pollution. Over fishing continues to be a problem for winter flounder, as confirmed by the 36<sup>th</sup> stock assessment review committee (SARC) convened in Woods Hole in the fall of 2002.

## **VI- COMMERCIAL DATA COLLECTION PROGRAM**

The state of Rhode Island is currently supporting three commercial fisheries statistic data collection programs. Data collection is currently based on a two ticket system utilizing data elements from both seafood dealers and commercial fishermen. This project is funded entirely with a full-time project coordinator by the Atlantic Coastal Cooperative Statistics Program (ACCSP).

The long-term goal of the ACCSP project is to implement a computer data feed for all seafood dealers in Rhode Island with the 2 ticket system for the finfish and the



lobster fisheries, and the 1 ticket system for the shellfish fishery. Currently, about 1800 harvesters, and 67 dealers are licensed and will be reporting under the proposed system. Seafood dealers are required to enter landings data into the computer system with trip level refinement. The original focus of electronic dealer reporting segment of the project was to prioritize dealers based on the amount of landings the dealer represents. In Rhode Island 10 dealers make up approximately 80 % of the states total landings. Approximately 80 % of the RI licensed seafood dealers hold a federal permit including all of the high volume dealers in the state. RIDFW has been working closely with the NMFS Point Judith field office during development and implementation to reduce duplicative effort and to assure that both entities needs are met by the ACCSP standards.

The first wave of implementation has been accomplished. With the majority of the high and mid volume dealers are reporting landings on a regular basis, the focus will shift to bringing in the larger shellfish dealers and those lobster dealers who hold no other federal permits except lobster. The latter dealers are exempt from electronic reporting due to a loophole in the rule. RIDFW has plans to set a schedule of dealer notification, public hearings, and outreach in an effort to promote industry buy in. RIDFW will use a phased approach to bring these dealers on line based on the amount of landings generated by each dealer. Several implementation options will be considered to meet the needs of both large and small dealers. The project will consider supplying a computer to dealers who can justify the need due to financial hardship. For this purpose, an application process will be developed and reviewed by the Department officials. The RI ACCSP coordinator will continue to provide a first line of technical support to users in RI.

In addition, RIDFW conducts commercial dockside sampling of two state waters fisheries, floating fish trap and rod and reel striped bass. A full-time sampler hired under contract and funded 100% by federal grant collects length and weight statistics and hard structures for aging.

## **VII- COOPERATIVE RESEARCH:**

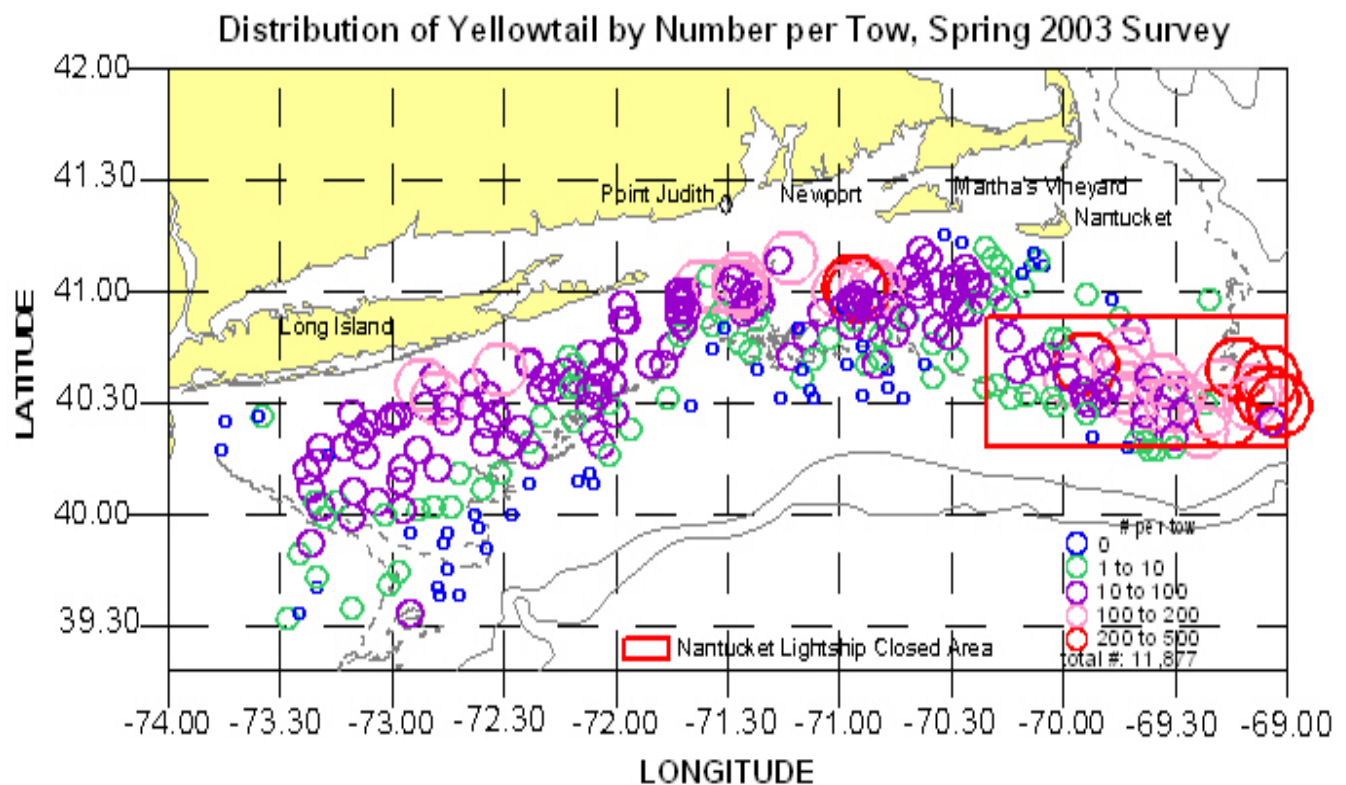
### **Industry-Based Yellowtail Flounder Study:**

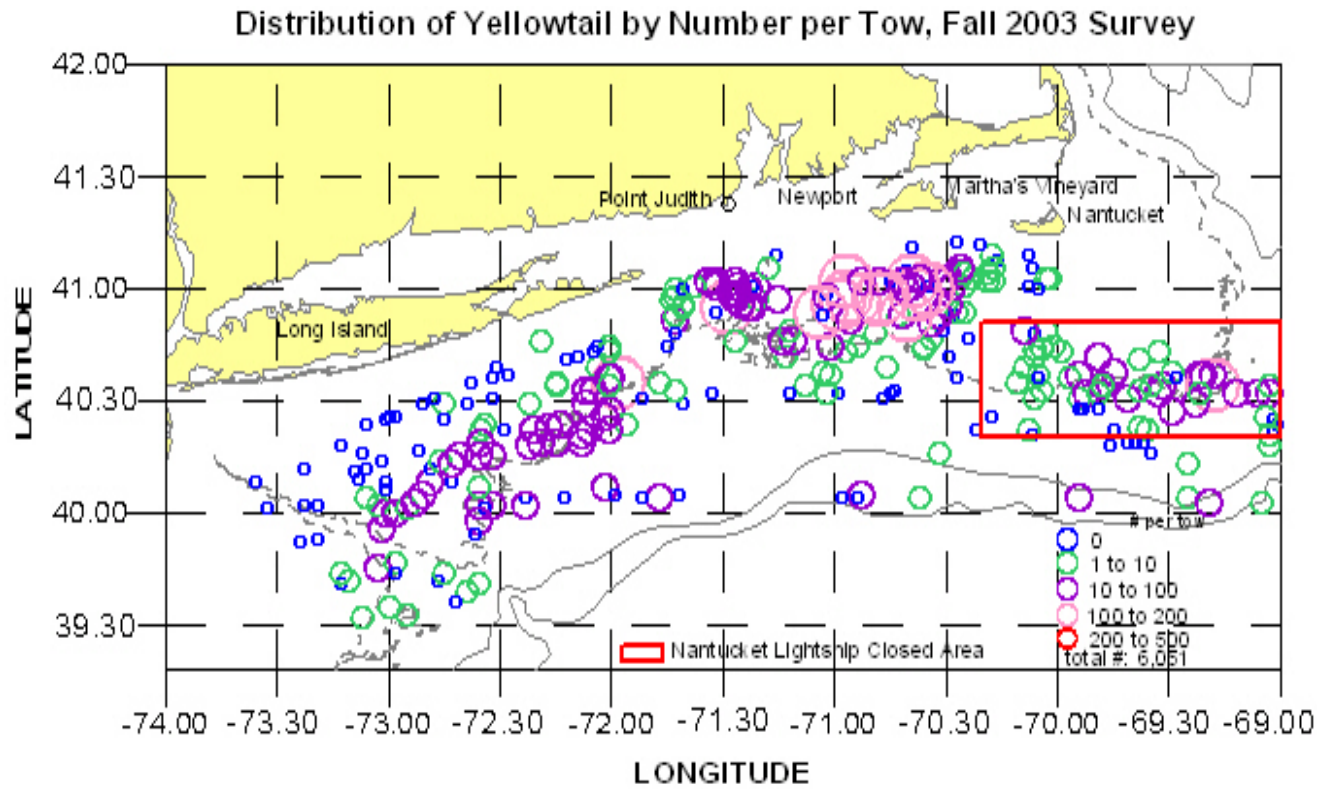
RIDFW, in partnership with NOAA fisheries and the commercial fishing industry, is in the second year of a resource survey on Southern New England (SNE) Yellowtail Flounder.

The objective of the survey is to assess the abundance, distribution, recruitment, movement patterns, sex ratio and size/age composition of SNE yellowtail flounder,

including the Nantucket Lightship Closed area. The survey is intended to complement NMFS bottom trawl surveys, using a flatfish net to target yellowtails throughout the SNE stock range. Three surveys have been completed to date: spring and fall 2003, and spring 2004. Over 300 tows per season for a total of over 900 tows have been made to date. The survey is conducted onboard commercial fishing vessels operating as scientific platforms, with trained sea samplers onboard to record pertinent data. The focus of the survey is to derive precise estimates of the abundance of SNE yellowtail flounder at age for stock assessment and management recommendations.

**Mesh Selectivity Study:** RIDFW, in partnership with URI Sea Grant and the commercial fishing industry, has conducted mesh selectivity studies on escapement rates of yellowtail flounder. The results of the study have been forwarded to the New England Fisheries Management Council for utilization in making management recommendations relevant to reducing retention of yellowtail flounder in commercial nets. Data on winter flounder escapement collected on this study is also being analyzed for management purposes.





**Tautog and black sea bass tagging:** RIDFW, in collaboration with the fishing industry and NMFS, began tagging tautog and black sea bass in 2002 to document growth, movement, and harvest rate. This program was also coordinated with other states between Massachusetts and Virginia. Results of tagging data were used in the most recent black sea bass assessment conducted by the Northeast Science Center.

### **VIII- FUTURE NEEDS OF THE MARINE PROGRAM:**

Future activities will involve continuing field work designed to collect information on the condition of fish stocks within the state's territorial waters and preparing stock assessments to support management plans for species under the jurisdiction of the Atlantic States Marine Fisheries Commission and the Regional Fishery Management Councils. A large percentage of staff time will be devoted to stock assessment and participation in the fisheries regulatory process at both the state and federal level. In addition, sampling of fish stocks will need to be intensified to provide data to support management decisions and to demonstrate changes which occur in the health of the stocks. Management plans will also be updated and implemented for the state's shellfish and lobster resources, and monitoring of the managed species will continue.

Current funding and staffing requirements are inadequate to achieve even minimum management standards. The management of living marine resources is a data-intensive activity. Although staff members do a very commendable job with limited financial and personnel commitments, continued management and monitoring of our fisheries resources in the face of increasingly stringent management practices demands additional data to permit more precise analysis. Given the importance of the marine environment to the state, creative ways must be found to finance an expansion of certain fundamental programs. The entire basis of monitoring the changing status of various resources is intimately linked to certain basic data gathering programs. The following constitutes the essence of a basic program:

- Secretarial support

At the current time the Marine section does not have secretarial support for the administrative work. The main activities are related to filing fisheries regulations, data entry, direct support to Marine Fisheries Management Council and fishermen's permits. Data entry back-logs contribute significantly to analytical assessment which causes delays in management actions. These delays have significant impact on fishermen's business. Personnel and budget requirements: one secretary at \$40,000 per year.

- Crustacean Management

There is a need to expand the current program to incorporate both larval and juvenile lobster research and expand the species list to include other crustaceans. The Division would like to begin an un-vented pot survey of lobster in cooperation with industry. Personnel and budget requirements: one biologist at \$50,000 per year. Convert T.J Wright trawl vessel to a lobster research vessel: \$70,000 in first year, \$20,000 each subsequent year.

- Shellfish

Shellfish research and management remains under-funded and under-staffed for meeting the high management demands by the fishing industry. The RIDFW currently has 1.5 staff FTEs devoted to shellfish management activities. This is in spite of the fact that 50,000 people participate in the recreational fishery and up to 3,500 participate commercially. Budget cuts and reprogramming directives have tended to discourage expansions of this program, since most of the activities can no longer qualify for federal matching funds. A basic shellfish research and management program for Rhode Island should include the following: collection of

length frequency, weight, count, catch-per-unit-effort, price, and other biological information on various species. These would include bay quahogs, bay scallops, oysters, surf clams, blue mussels, and soft-shelled clams at a minimum.

Additional desirable features to augment the shellfish program would include: (a) an activation of our Fish and Wildlife shellfish hatchery to provide seed for stocking depleted areas and for research and (b) a biologist trained in shellfish pathology to monitor shellfish populations for disease and to certify the disease free status of shellfish transferred for aquaculture purposes. Personnel and budget requirements: two positions; total cost of \$100,000 per year.

- Marine Mammals

RIDEM has developed the “RI Conservation and Management Plan for Endangered whales and Sea Turtles” however the Department is currently unfunded to carry out the work elements. Due to the number of endangered species that transit RI near shore waters and the continued demise of the right whale population, RIDEM has been asked by NOAA fisheries to increase its involvement with marine mammals, with increasing demands on staff. RIDEM should pursue Section 6 funding under the Endangered Species Act, in addition to the continued pursuit of grant monies to support marine mammal work. Personnel and budget requirements: one biologist at \$50,000 year.

- At Sea Observers

There is an acute need to develop a sea sampling program in state waters similar to that now required by law in federal waters. Trained observers are needed to ride aboard commercial fishing vessels to observe fishing practices, estimate discarded catch, and to take biological samples. Currently, the state conducts sea sampling only in the lobster fishery. This should be expanded to cover shellfish and finfish. Personnel and budget requirements: two fishery technicians at \$80,000 year.

